INTRODUCTION

The oyster industry in North Carolina is dependent on the abundance of wild populations of the eastern oyster Crassostrea virginica. At the turn of the century, good quality oysters were harvested from natural populations (Winslow 1889; Grave 1903). However, the lack of an effective management program and overharvesting have lead to a precipitous decline in harvest since that time. Annual landings have decreased from 1.5-1.8 million bushels from 1890-1900, to less than 300 thousand bushels since 1960 (Fig. 1). This pattern of decline is similar to other oyster producing regions of the eastern United States (Krantz and Meritt 1977; MacKenzie 1983; Hargis and Haven 1988; Kennedy 1989).

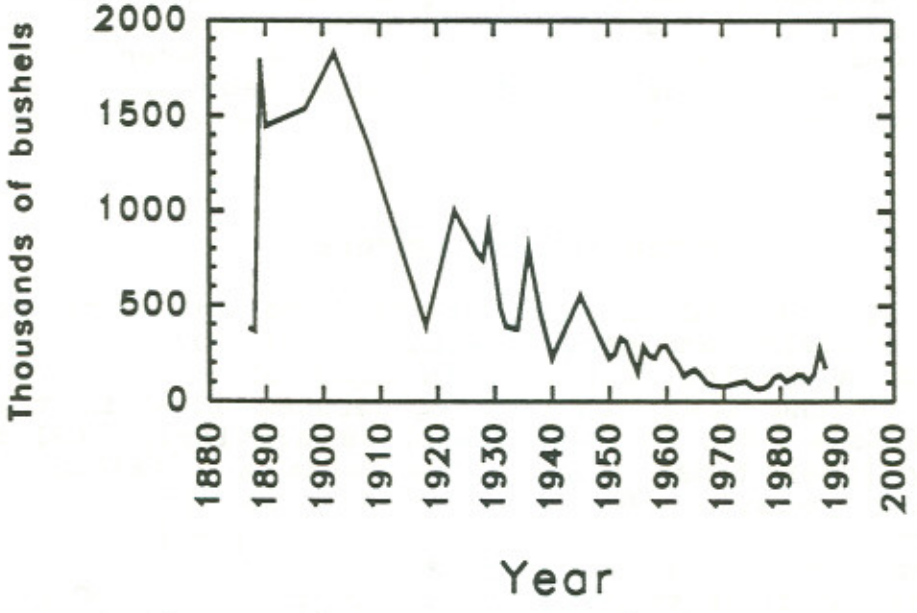

Figure 1. North Carolina oyster landings by year, 1887-1988. Bushels are U.S. standard bushels. Source: Fishery Statistics of the United States and the North Carolina Division of Marine Fisheries.

In order to increase the size of North Carolina's oyster populations, the North Carolina Division of Marine Fisheries (NCDMF) initiated a program of cultch planting in the late 1940s (Munden 1975; 1981). Such programs have been shown to be an effective means of increasing oyster density when over-harvesting removes the hard substrata necessary for oyster settlement (Ulanowicz et al. 1980; MacKenzie 1983; Abbe 1988). However, the success of a particular cultch planting program will vary depending on spatial and temporal patterns in the settlement, growth, and survival of oysters. Although these patterns have been studied intensively along the east coast of the United